

REMARKS

Claims 9, 11 and 13-32 are pending in this application. Claims 9, 11 and 13-32 are rejected. Claims 17 and 27 are herein canceled. Claims 9, 11, 13-15, 18, 19, 23-25, 28 and 29 are amended herein. Attached hereto is a marked-up version of the changes made by the current amendment, entitled, "Version with Markings to Show Changes Made."

Claim Rejections under 35 U.S.C. §112

Claims 9, 11 and 13-32 are rejected under 35 U.S.C. §112, first paragraph. The claims were amended (and new claims added) to specify the basis of the molecular weight as “weight-average” for the toner components with molecular weights between 500 and 1000.

Upon closer review of this rejection and the specification, Applicants note that claims 9, 11, 13, 18 19, 23, 28 and 29 do **not** appear to require the previously amended language “weight average”, because the molecular weight referred to therein does not refer to a weight **average**, but instead refers to a weight distribution. The specification on page 13 clearly sets out the method used to determine the weight ratio (P), which is based on a direct measurement of weight distribution. Applicants therefore re-amend claims 9, 11, 13, 18 and 19, and amend claims 23, 28 and 29 to no longer refer to “weight average”, and note that the use of the term “average” was the Examiner’s addition, not Applicants, and that the claims are sufficiently supported as originally filed.

Claims 9, 11 and 13-32 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner asserts that it is unclear in the method claims if the binder is a binder resin. Applicants herein adopt the Examiner's suggestion to amend the claim to recite that the binder is a "binder resin".

The Examiner asserts that it is unclear in the apparatus claims how the "supply of toner" is structurally related to the other components of the apparatus. Applicants herein add language to the claims to more clearly recite the relationship between the toner supply and the apparatus, consistent with the specification. This language is supported by the description on page 10, lines 8-18 of the specification.

The Examiner asserts that claims 15 and 25 are also indefinite because it is unclear what amount of the group R is ethylene. The claim states that "**up to 60 mol % or more**" of the alcohol component have R as ethylene. The limitation is confusing because it is unclear if applicants are limiting the amount of ethylene in R to up to 60 mol % or include some other value(s) larger than 60 mol %.

Applicants herein amend the claim to recite the absolute limits of the amount of R contemplated in the claim. If appropriate, we propose amending the claim to read, "**up to 60 mol % or more**".

Claim Rejections under 35 U.S.C. §102

Claims 11 and 23-31 are rejected under 35 U.S.C. §102(e) as being anticipated by Hirao et al. in U.S. Patent 6,175,715. The Examiner asserts that it is unclear how the toner is structurally integrated into the apparatus as directed in the §112, second paragraph, rejection above.

Applicants herein amend claim 11 to include, “a developing means comprising a supply of toner, said developing means being adapted to apply a portion of the toner to a flash fixing unit”. This language is supported by the description on page 10, lines 8-18 of the specification. Applicants submit that the amendment overcomes the rejection.

Claim Rejections under U.S.C. §103

Claim 32 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hirao et al. in U.S. Patent 6,175,715 in view of the admitted art.

The Examiner concludes that it would have been obvious to use a HEPA filter as the filter 82 in Hirao because Hirao desires a filter that will collect the noted compounds and HEPA filters are well known in the art to be extremely effective at collection of particles up to a micron in size.

Applicants respectfully disagree with this rejection, and assert that as noted above, the amendment to claim 11 patentably distinguishes over the cited reference. Because claim 32 is dependent from claim 11 and necessarily includes at least the limitations of claim 11, Applicants assert that claim 32 should be patentably distinct as well.

Claims 9, 13, 19 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP 7-244400 in view of Handbook of Imaging Materials to Diamond, pages 160-162, and further in view of Electrophotography to Schaffert, pages 55-57, still further in view of JP 5-107805, and finally in view of the admitted art.

Claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over JP 7-244400 in view of Handbook of Imaging Materials to Diamond, pages 160-162, further in view of Electrophotography to Schaffert, pages 55-57, still further in view of JP 5-107805 and in view of the admitted art as applied to claims 9, 13, and 19 above, and still further in view of Inaba et al. in U.S. Patent 5,741,617.

Claim 17 is rejected in view of the cited references as applied to claims 9, 13 and 19 above, and still further in view of Fukuzawa et al. in U.S. Patent 6,052,940.

Claims 9, 13, 18, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-198068 in view of Handbook of Imaging Materials to Diamond, pages 160-162, and further in view of Electrophotography to Schaffert, pages 55-57, still further in view of JP 5-107805, and finally in view of the admitted art.

The Examiner concludes that it would have been obvious to collect a sublimate of the toner binder resin because the background section states that this is a conventional feature of flash fusing processes. With respect to the combination of the toner of JP 5-107805 with the flash fusing process described in Schaffert, the Examiner asserts that “an additive effect would have been expected as there would be less scattered toner using the toner of the JP reference.”

Applicants note that the Examiner has still not shown a suggestion or motivation to combine the two references. The Examiner appears to be asserting that it would be obvious to combine a toner that is not known for use in a flash fixing process, with a flash fusing process that specifies a different toner than that claimed. The motivation, according to the Examiner, is that “the references are concerned with similar issues.”

However, Applicants note that the toner of JP 5-107805 is not disclosed or taught as a toner for flash fusing. Applicants further note that the flash fusing process disclosed in the cited reference does not indicate that a toner such as the claimed toner is either needed or even would function. While the Examiner notes that both the flash fusing process and the toner of JP 5-107805 have a benefit of reducing scattered particles, this is not positive suggestion or motivation to combine the references to reach the presently claimed invention. It is not an expectation of success, merely a notation that the toner of JP 5-107805 and the process of flash fusing have the similar benefit of avoiding toner scatter.

Claims 9, 13-15 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. in U.S. Patent 5,840,459 in view of Handbook of Imaging Materials to Diamond, pages 160-162, and further in view of Electrophotography to Schaffert, pages 55-57, still further in view of JP 5-107805, and finally in view of the admitted art.

Claims 9, 13, 18, 19 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ayaki et al. in U.S. Patent 5,985,502 in view of Handbook of Imaging Materials to Diamond, pages

160-162, and further in view of Electrophotography to Schaffert, pages 55-57, still further in view of JP 5-107805, and finally in view of the admitted art.

The Examiner concludes that one would also have found it obvious to use flash fusing to fix the toner of Ohno et al. to a substrate, such as paper, because heat fixing is taught as desired in Ohno et al. and the supporting art shows that flash fusing is a well known method of heat fixing.

Similar to the argument above, Applicants note that the toner of Ohno et al. is not disclosed or taught as a toner for flash fusing. Applicants further note that the flash fusing process disclosed in the cited reference does not indicate that a toner such as the claimed toner is either needed or even would function. While the Examiner notes that both the flash fusing process and the toner of Ohno et al. have a benefit of reducing scattered particles, this is not positive suggestion or motivation to combine the references to reach the presently claimed invention. It is not an expectation of success, merely a notation that the toner of Ohno et al. and the process of flash fusing have the similar benefit of avoiding toner scatter.

Moreover, Applicants note that the cited reference does not disclose a toner containing the claimed ratios of components having the claimed molecular weights. The claims of Ohno et al. include the limitation of "an areal percentage of at most 15% of a component having a molecular weight of at most 1000". The Examples in Table 3 show 5.4-6.6% of a component having a molecular weight of at most 1000. Applicants respectfully assert that the Examiner's statement that "it is reasonable to expect that less than 4 parts of the toner would be components having a molecular weight below 500" is not the standard for obviousness. There does not appear to be a suggestion or

Amendment under 37 C.F.R. §1.116
Yasuhige NAKAMURA et al.

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teaching to use the claimed percentages, and there is no indication of the distribution of the molecular weights either above or below 500.

For at least the above reasons, Applicants submit that the claimed invention, as herein amended, overcomes the rejections of record and defines patentable subject matter. Withdrawal of the rejections and passage of the claims to issue is earnestly request.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees that may be due with respect to this paper to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



Kenneth H. Salen
Attorney for Applicants
Reg. No. 43,077

KHS/plb
Atty. Docket No. 000738A
Suite 1000, 1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claims 9, 11, 13-15, 18, 19, 23-25, 28 and 29 as follows:

9. (Twice Amended) An image forming method comprising:

a step of forming an image on a medium by using a developer comprising a toner in which the amount of the toner measured by gel permeation chromatography to have a weight average molecular weight of 500 to 1000 is less than 10 parts by weight with respect to 100 parts by weight of the entire toner;

a step of performing flash fixation of the toner on said medium, and

a step of collecting with a filter a sublimate of a binder resin of the toner caused by the flash fixing.

11. (Twice Amended) An image forming apparatus comprising:

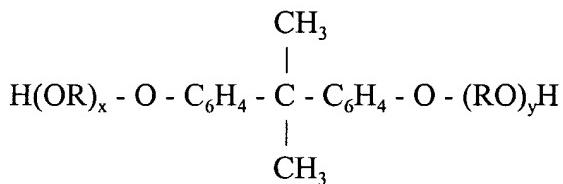
an image forming unit for forming a toner image on a medium, ~~a supply of toner in which~~
said image forming unit comprising a latent image carrier, a developing means for supplying
toner containing a binder resin to said latent image carrier, and a transfer unit for transferring the
toner on said latent image carrier to said medium, wherein the amount of the toner measured by gel permeation chromatography to have a weight average molecular weight of 500 to 1000 is less than 10 parts by weight with respect to 100 parts by weight of the entire toner,

a flash fixing unit for performing flash fixation of the toner on said medium, and

a filter for collecting dust of said apparatus.

13. (Twice Amended) The image forming method of claim 9, wherein:
the amount of the toner having a ~~weight average~~ molecular weight of 500 or less,
measured by gel permeation chromatography, is less than 4 parts by weight with respect to 100
parts by weight of the entire toner.

14. (Amended) The image forming method of claim 9, wherein:
said ~~binding agent binder~~ resin comprises at least a polyester resin prepared from a
polyester alcohol component consisting of a bisphenol-A-alkylene oxide additive, as an alcohol,
expressed by the chemical formula given below, and an acid:



where, R is ethylene or propylene, and x and y are both integers equal to 1 or more.

15. (Amended) The image forming method of claim 14, wherein:
x and y in the formula for said bisphenol-A-alkylene oxide additive are 1, and R is
ethylene in up to 60 mole % ~~or more~~ of said polyester alcohol component.

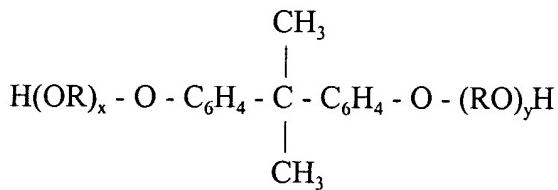
18. (Twice Amended) The image forming method of claim 9, wherein:
the amount of the toner having a ~~weight average~~ molecular weight of 500 or less, as
measured by gel permeation chromatography, is less than 4 parts by weight with respect to 100
parts by weight of the entire toner; and
said developer includes a carrier having an average particle diameter of 30 to 100 μm .

19. (Twice Amended) The image forming method of claim 9, wherein said amount of
the toner measured by gel permeation chromatography to have a ~~weight average~~ molecular
weight of 500 to 1000 is 5 parts by weight or less with respect to 100 parts by weight of the
entire toner.

23. (Amended) The image forming apparatus of claim 11, wherein:
the amount of the toner having a ~~weight average~~ molecular weight of 500 or less,
measured by gel permeation chromatography, is less than 4 parts by weight with respect to 100
parts by weight of the entire toner.

24. The image forming apparatus of claim 11, wherein:

said ~~binding agent~~ binder resin comprises at least a polyester resin prepared from a polyester alcohol component consisting of a bisphenol-A-alkylene oxide additive, as an alcohol, expressed by the chemical formula given below, and an acid:



where R is ethylene or propylene, and x and y are both integers equal to 1 or more.

25. (Amended) The image forming apparatus of claim 11, wherein:

x and y in the formula for said bisphenol-A-alkylene oxide additive are 1, and R is ethylene in up to 60 mole % ~~or more~~ of said polyester alcohol component.

28. (Amended) The image forming apparatus of claim 11, wherein:

the amount of the toner having a ~~weight average~~ molecular weight of 500 or less, as measured by gel permeation chromatography, is less than 4 parts by weight with respect to 100 parts by weight of the entire toner; and

said developer includes a carrier having an average particle diameter of 30 to 100 μm .

29. (Amended) The image forming apparatus of claim 11, wherein said amount of the toner measured by gel permeation chromatography to have a weight average molecular weight of 500 to 1000 is 5 parts by weight or less with respect to 100 parts by weight of the entire toner.